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Editorial

Measuring Open Access Uptake: Methods and Metrics to Assess a Market Transformation

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Abstract: In this editorial, we will introduce the contributions to the Special Issue entitled "*Measuring Open Access Uptake: Databases, Metrics, and International Comparisons*." The contributions to this Special Issue explore the methods and metrics that are used to assess open access (OA) uptake across disciplines and regions, a crucial topic considering the growing push by several research institutions worldwide to achieve 100% OA. We will discuss the impact of OA on scholarly publishing, focusing on how economic factors and discipline-specific practices shape its adoption. Additionally, we will examine the transformation of OA models, the citation benefits of a hybrid OA model, and regional perspectives. Our analysis identifies key challenges and disparities in OA adoption and suggests future directions for achieving sustainable and equitable access to research.

Keywords: measurement methods; regional disparities; sustainability; open access; publication market transformation

1. The Shift toward Open Access: Methods and Metrics

The open access (OA) movement represents a fundamental shift in scholarly communication, aiming to democratize access to research by making it freely available to anyone with an Internet connection. Three main events inaugurated the advent of open access publishing in the 21st century, namely the Budapest Open Access Initiative in 2002, the Bethesda Statement on Open Access Publishing in 2003, and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, also in 2003 [1–3]. This transformation is driven by the belief that unrestricted access to knowledge accelerates scientific progress, enhances collaboration, and democratizes education. However, the adoption of open access is not without its challenges, and the extent of its uptake across different fields, regions, and publication models is a complex phenomenon which requires rigorous assessment. In the following Editorial, we reflect on the methods and metrics used to measure open access uptake, identify key challenges and disparities limiting its full adoption, and offer a perspective on its potential future directions. We also showcase the valuable contributions to this Special Issue.

Currently, open access comes in different forms and colors. Perhaps the two most common are Green and Gold. Green open access refers to self-archiving, where authors deposit their manuscripts in personal, commercial, or institutional repositories, making them freely available, often after an embargo period. Gold open access involves publishing in open access journals that render articles directly available without charge to the reader. While the Green Road was instrumental in the early stages of open access, the Gold Road, particularly through hybrid models, has gained significant traction. Infrastructure, policies, incentives, challenges, and obstacles play a crucial role in guiding the adoption and practice of open access, and also impacts other dimensions of the market, such as peer review [4,5].

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Here, another important aspect to understand is the uptake and prevalence of open access. One of the primary methods used to this end is bibliometric analysis. By analyzing large datasets of publications, researchers can track the proportion of articles available through open access over time, across disciplines, and within specific institutions. This method provides a quantitative assessment of how much of the scholarly literature is openly accessible and how this proportion is changing. For instance, the Open Access Monitor in Germany provides comprehensive metrics for analyzing the uptake of open access at both the national and institutional levels [6].

Measuring open access, however, is not just about counting articles [7]; it also involves assessing the quality and impact of open access publications. One way to achieve this is by examining citation patterns. Studies have consistently shown that open access articles tend to receive more citations than their subscription-based counterparts, a phenomenon often referred to as the "open access citation advantage" [8]. This advantage is not uniform across all disciplines, and some fields, particularly in the humanities and social sciences, show less-pronounced effects. Nonetheless, the general trend supports the argument that open access enhances the visibility and impact of research.

While open access indeed brings many advantages, economic aspects are a critical factor influencing its uptake. Here, the most significant economic consideration is the article processing charge (APC); a fee charged to authors to cover the costs of publishing in open access journals. While APCs have, in general, facilitated the growth and development of open access, they have also raised concerns about the affordability of publishing, particularly for researchers in lower-income regions or institutions where open access funding schemes are scarce [9]. The relationship between APCs and citation impact has been explored, and the findings suggest that higher APCs are often associated with higher citation rates, although this relationship varies across disciplines.

In addition to APCs, the availability of funding sources for these charges plays a crucial role in promoting open access. The importance of institutional and governmental support in the social sciences, arts, and humanities, where funding for APCs is often less readily available than in the natural sciences, has already been emphasized [10]. This disparity in funding contributes to the uneven adoption of open access across disciplines, with some fields moving towards full open access more rapidly than others.

Indeed, the uptake of open access varies significantly across different regions and disciplines. In Europe, national policies and mandates have guided a substantial shift towards open access, particularly in countries such as Germany, the Netherlands, and the UK, where governments have implemented strong support and mandates for open access publishing [11]. In contrast, regions such as Asia and Africa face more significant challenges due to scare funding and infrastructure, as well as varying levels of governmental support.

In North America, open access uptake is shaped by a diverse landscape of funding bodies, institutional policies, and disciplinary norms. A study by Tummon and Desmeules (2022) on Canadian academic libraries within the U15, a group of leading research universities, found varying levels of commitment to open access, reflecting broader trends seen across North America [12]. Similarly, Cary and Rockwell (2020) demonstrated that international collaboration in open access publications is often influenced by the income levels of the collaborating countries, with higher-income countries leading the charge in open access adoption [13].

Disciplinary differences in the uptake of open access are not only due to economic factors, but are, rather, also influenced by discipline-specific practices and publishing norms. Fast paced fields such as biomedicine and physics have embraced rapid dissemination through open access journals and preprint platforms. Perhaps driven by funding and institutional mandates, such fields prioritize the timely availability of research findings. In contrast, fields such as philosophy and history have been slower to adopt open access, partially due to the lower availability of funding for APCs, but mainly because the slower pace of research dissemination in these areas and the fact that key journals remain subscription-based [14].

From another perspective, open access has profoundly changed the dynamics of scholarly publishing. Notable shifts are the reduction in article processing time and the speed in which articles receive their first citations. Lin (2021) examined the effects of open access and articles-in-press mechanisms on journals in the field of energy and fuels, finding that open access practices significantly reduced the time from submission to publication and from publication to first citation [15]. This acceleration is particularly important in fast-moving fields where the timely dissemination of research is critical.

Additionally, open access contributes to the scrutiny of articles received from the academic community. Maddi et al. (2024) observed a "streetlight effect" in the scrutiny of open access publications, where these articles, due to their higher visibility, are more likely to receive comments and critiques on platforms like PubPeer [16]. While this increased scrutiny can be seen as a positive aspect of open access, ensuring that research is held to high standards, it also raises concerns about potential biases against open access publications.

As the open access movement continues to evolve, new models and approaches are emerging. One such model is "Subscribe to Open", which seeks to transition subscription-based journals to open access by leveraging existing subscription revenues [17]. This model represents a potential solution to the financial challenges of open access, offering a pathway to sustainability which does not rely solely on APCs. Additionally, the increasing use of altmetrics, which measure the impact of research through social media mentions, news coverage, and other online interactions, provides a better understanding of the influence of open access publications [9]. The future of open access will likely involve a combination of approaches, with different models coexisting and complementing each other. However, achieving the full potential of open access will require ongoing collaboration between researchers, institutions, funders, and publishers, as well as a continued focus on addressing the economic, ethical, and practical challenges that remain. We expect the related methods and metrics to evolve in line with this shift.

2. Key Findings and Perspectives from This Special Issue

In this Special Issue, "Measuring Open Access Uptake: Databases, Metrics, and International Comparisons", we received valuable contributions which provide significant insights into the evolving landscape of open access (OA), each focusing on different aspects of this transformation. These studies collectively refine and advance our understanding of the diverse strategies and challenges associated with OA adoption, from the Green Road to hybrid models and the perspectives of scientific journal editors.

The study by Schöpfel et al. (2023) examines the ongoing transformation of the Green Road to open access [18]. The Green Road, traditionally characterized by self-archiving practices, has seen significant evolution, particularly with the increasing integration of institutional mandates and repository infrastructure. Schöpfel and colleagues explore how these developments have reshaped the Green Road, making it a more viable and widespread option for researchers. The study highlights the role institutional repositories can play, when supported by robust policies and mandates, in advancing Open access. The authors also discuss the challenges associated with this model, such as compliance issues, embargo periods, and the need for better alignment between institutional policies and researchers' publishing practices. This article calls for a well-coordinated approach between institutions, researchers, and policymakers to maximize the effectiveness of the Green Road. It also provides a comprehensive analysis of the benefits and limitations of this OA model, offering valuable insights for institutions looking to enhance their open access strategies.

In the piece authored by Saravudecha et al. (2023), the citation advantage of hybrid Gold open access within clinical medicine is addressed [19]. Hybrid open access journals, which offer authors the option to make their articles open access for a fee, represent a middle ground between traditional subscription models and full open access. Saravudecha and colleagues conducted a comprehensive analysis of hybrid journals in the Web of Science database, focusing on the field of clinical medicine.

Their findings indicate a clear citation advantage for articles published as open access compared to those behind paywalls. This citation boost is particularly pronounced in clinical medicine, where timely access to the latest research can directly impact patient care and treatment decisions. Their results highlight the potential of hybrid OA models to enhance the visibility and impact of research, particularly in fields where the rapid dissemination of knowledge is critical. The authors, however, note and emphasize the financial burden posed by APCs, as they consider it to be a barrier for some researchers, particularly those from less-funded institutions. The study contributes to the ongoing discussion about the sustainability and equity of hybrid open access models and emphasizes the need for more inclusive funding mechanisms to support broader participation in open access publishing.

Similarly, Fu et al. (2023) explore the attitudes and actions of scientific journal editors in China regarding open access [20]. As a major contributor to global research output, China's approach to open access is of considerable interest to the international academic community. Fu and colleagues conducted surveys and interviews with journal editors across a range of scientific disciplines to gauge their perspectives on open access publishing.

Their results reveal a cautious but growing acceptance of open access among Chinese journal editors. While many editors recognize the benefits of OA in terms of increased visibility and citation impact, there are also significant concerns about the financial sustainability of the OA model. The authors discuss how these concerns are particularly relevant in the Chinese context, where the pressure to maintain high-quality publications and the financial implications of APCs are seen as potential barriers to broader open access adoption. Fu et al. also address the role of government policies and institutional mandates in shaping the open access landscape in China. The study suggests that while there is momentum towards greater openness, the transition is likely to be gradual, with hybrid models playing a critical role during this period of change.

Together, these contributions offer a multifaceted view on the current state of open access. They underline the importance of tailored approaches which account for the unique challenges and opportunities within different regions, disciplines, and publishing models. As the open access movement continues to grow, these insights will be crucial for shaping policies and practices that ensure the equitable and sustainable dissemination of knowledge across the global research community.

3. Conclusions

The transformation towards open access is a complex and multi-faceted process requiring careful measurement and constant analysis. By employing a range of methods and metrics, from bibliometric analysis to economic assessments, researchers can better understand the extent of open access uptake and its implications for the scholarly publishing landscape. While significant progress has been made, particularly in regions with strong mandates and funding support, challenges remain, particularly in ensuring that open access is available and sustainable across all disciplines and regions. As the market for scholarly publishing continues to evolve, it will be crucial to develop innovative models that address these challenges and maximize the benefits of open access for the global research community.

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